

REMARKS

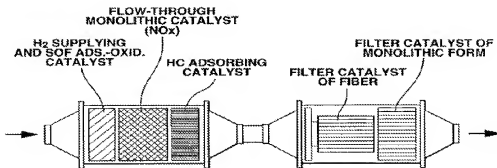
By this amendment, Applicants have amended claim 1 to include the embodiment where the hydrocarbon adsorber has up to 1g/L platinum on it and the hydrocarbon adsorber and the wall flow filter are disposed in one converter housing. Support for the amendments to claim 1 can be found in the specification, for example, at paragraphs 24 and 36 of the published application US 2007/0119152 and claim 2. These amendments do not add new matter. Applicants respectfully requests entry of these amendments and allowance of the pending claims.

I. Claim Rejections Under 35 U.S.C. § 103(a)

The Examiner rejected claims 1, and 5-7 under 35 U.S.C. 103(a) as allegedly being obvious in view of U.S. Patent Publication 2002/0053202 (Akama) and 2001/0036432 (Hu). The Examiner also rejected claims 2 and 3 under 35 U.S.C. 103(a) as allegedly being obvious in view of Akama and U.S. Patent No. 6,080,375 (Mussmann). Applicants respectfully traverse these rejections.

The Examiner cites to Figure 5 (Example 16) of Akama to support his position that the claims are obvious. Applicants respectfully disagree. For convenience, Figure 5 of Akama is reproduced below:

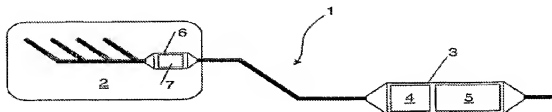
FIG.5



(EXAMPLE 16)

Figure 5 of Akama teaches an arrangement of two converter shells one after the other. The upstream converter shell contains an oxidation catalyst, NO_x-absorbing catalyst and a HC-adsorbing catalyst. All three catalysts are directly abutting one another and all in one housing.

The downstream converter shell contains two different filter catalysts. Both converter shells are located only a short distance from one another. Akama's arrangement is contrary to Applicants' arrangement as currently claimed in claim 1 (which is also shown in Applicants' Figure 1 reproduced below).



More particularly, Applicants' oxidation catalyst 7 is located close to the engine 2 so that it warms up quickly after cold start. The particulate filter 5 as recited in claim 1 is arranged in the underfloor area of the motor vehicle and is in the same converter housing as the hydrocarbon adsorber (4). This location poses less stringent conditions with respect to space as would locations closer to the engine (such as the arrangement illustrated in Akama's Figure 5). Thus, Applicants' filter can be made larger in order to reduce back-pressure. The drawback of the underfloor location is the fact that the exhaust gas is already quite cool when it reaches the underfloor area. But this fact is utilized advantageously by Applicants by placing the hydrocarbon adsorber 4 in the same converter shell 3 as the filter and directly in front of the filter 5. The advantage here is that the hydrocarbon adsorber, too, remains quite cool and thus maintains its ability to store hydrocarbons from the exhaust gas over wide operating conditions of the engine. Only when the exhaust gas temperature of the engine is raised voluntarily, (e.g. by engine control unit) the temperature in the underfloor area can be raised up to a level where the hydrocarbon adsorber desorbs the stored hydrocarbons which then in turn gets combusted at the catalyst of the particulate filter to raise the temperature of the filter up to the ignition temperature of the accumulated soot. Applicants' arrangement is in contrast to Akama's arrangement because Akama has the oxidation catalyst, NO_x-absorbing catalyst and a HC-adsorbing catalyst all together in one housing

Further, Akama contemplates a hydrocarbon adsorber having a considerable amount of precious metals (e.g., see example 16 of the Akama reference). In contrast, the current claims have the feature where the hydrocarbon adsorber has a low concentration of platinum on it (up to 1g/L platinum). Akama does not disclose this feature. Following the teachings of Akama, the

hydrocarbon adsorber (HC-adsorber) adsorbs hydrocarbons thereby making it possible to effectively remove hydrocarbons particularly during engine starting or at so-called cold start. If this is the only function of the HC-adsorber, obviously the catalyst needs to contain a larger amount of precious metals to combust the stored HCs. This is in contrast to the claimed low precious metal load on Applicants' HC-adsorber of up to 1g/L platinum.

Moreover, there is no disclosure in Akama that the HC-adsorber should reside in front of the filter in the same housing. Applicants respectfully submit that there is no teaching found in Akama that directs one of ordinary skill in the art to build a system according to the current claims, namely to have the HC-adsorber close to the particulate filter in one converter housing in the underfloor area of the vehicle and where the HC-adsorber has a low load of precious metal.

To the contrary, Akama teaches that the HC-adsorbing catalyst is disposed downstream of the filter catalyst and/or formed in or on the filter catalyst (see Akama at paragraph 54). In Akama, the oxidation reaction occurring in the filter generates NO₂ which, subsequently, removes dry soot (CRT-effect). It is said that particulate matter (PM) accumulated on the filter catalyst can thus be effectively combusted and removed (see Akama at paragraph 49). Akama emphasizes that "during this exhaust gas temperature control, the concentration of oxygen in exhaust gas is raised so that combustion is spread to oxidize and remove PM (see Akama at paragraph 58). In contrast, in the current application, the temperature is increased to lower the A/F-ratio of the exhaust gas through desorption of HC and their combustion on the filter catalyst. Applicants respectfully submit that on a fair and accurate reading of Akama, one of ordinary skill in the art would not obtain a HC-adsorber with low precious metal load in front of the filter to ease combustion of PM. Therefore, Akama does make obvious the pending claims.

Like Akama, Hu does not make the current claims obvious. Hu's close coupled catalyst accomplishes the oxidation of carbon monoxide and hydrocarbons and reduction of nitrogen oxides at cold start conditions. Hu's catalyst comprises components of the type used in a three way catalyst (TWC) composition except that there is substantially no oxygen storage component present (see, Hu at paragraphs 32-33). Applicants respectfully submit that TWC and oxidation catalysts are different things. TWCs are used in gasoline engines and need stoichiometric exhaust conditions, while the oxidation catalyst of Akama is used in a lean-burn engine. Therefore, one of ordinary skill would not combine Akama, which is directed to oxidation catalysts in lean-burn engines, with Hu, which is directed to TWC the way the Examiner

combines them.

Like Akama and Hu, Mussmann does not make the current claims obvious. Mussmann teaches several zeolite materials as HC-adsorbers for lean-burn engines. They do not exhibit any catalytically active component at their specific surface, and they are implemented in a special layering technique in which two layers with different catalytic activities are attached to each other. Mussmann is concerned with catalysts for lean-burn engines and not three way catalysts as in the current application. Further, Mussmann does not make obvious the arrangement of the oxidation catalyst close to the engine while the particulate filter is arranged in the underfloor area of the motor vehicle and where the HC-adsorber has a low load of precious metal.

Applicants respectfully submit that one of ordinary skill in the art would not combine the references in the way the Examiner does. Even if one of ordinary skill in the art was to combine the references one would still not obtain the present claims. Accordingly, Applicants respectfully submit that the claims cannot be considered obvious over any of the cited references alone or in combination and request that the rejections under 35 U.S.C. §103(a) be reconsidered and withdrawn.

II. Conclusion

Reconsideration and allowance are respectfully solicited

No fee is believed to be due with respect to filing this amendment other than the RCE fee. If any additional fees are due, or an overpayment has been made, please charge, or credit, our Deposit Account No. 11-0171 for such sum.

If the Examiner has any questions regarding the present application, the Examiner is cordially invited to contact Applicants' attorney at the telephone number provided below.

Respectfully submitted,

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